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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,832	07/03/2001	G. Glenn Henry	CNTR:2024	1114

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EXAMINER	
KIM, KENNETH S	

ART UNIT	PAPER NUMBER
2111	5

DATE MAILED: 03/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/898,832	Applicant(s) HENRY ET AL.	
	Examiner Kenneth S KIM	Art Unit 2111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

KENNETH S. KIM
PRIMARY EXAMINER

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Claims 1-50 are presented for examination.

2. Applicant is requested to fill in the blanks in the specification (e.g., pages 19 and 20).

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 1, it is not clear how the indication of whether the microprocessor branched or not at the instruction buffer stage (prior to execution) is possible. It is also not clear whether the branch indicator is indicating that the target address lies within the instruction buffer, such that the selection of stages based on the indicator is justified.

(b) Claims 6 and 7, it is not clear how the instruction (or the branch instruction) is indicated to wrap beyond the bottom stage from the length of an instruction residing in said bottom stage.

(c) Claim 21, the same as (a).

(d) Claim 36, it is not clear how the format logic determine the length of the branch instruction after the multiplexer selects the first stage, if the stage contains only a portion of the branch instruction. It is not clear why the selection of third line is based on the length of the branch instruction when the target address is provided by BTAC.

(e) Claim 41, the same as (a) and "generating a length of a first instruction in said first cache line" and "determining whether said first instruction wraps beyond said first cache line based on said length " is inconsistent and ambiguous. It is also not clear why the selection of cache line in buffer depends on any aspect of the first instruction.

(f) Claims 41, 42, and 44, the logic why the third (second) line is selected based on the first instruction wrap indication and the fact that the microprocessor branched is not clear.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1 and 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Harris, U.S. Patent No. 6,260,183.

Harris teaches the invention as claimed in claim 1 including a microprocessor comprising:

(a) an instruction buffer (26), comprising a plurality of stages for buffering instruction bytes received from an instruction cache (16),

(b) a branch indicator (18) associated with each of said plurality of stages, for storing indication of whether or not the microprocessor branched to a target address of a branch instruction buffered in said associated stage (col. 4, lines 50-54;col. 5, line 8),

(c) a multiplexer (28) coupled to said instruction buffer, for selecting one of said plurality of stages based on said branch indicator associated with one of said plurality of stages (col. 6, lines 53-57), and

further teaches as in claims 18-20,

(d) further comprising a branch target address cache (BTAC) (col. 4, line 55) and control logic to provide said branch indicator when a fetch address to said instruction cache hit said BTAC (well known) – claims 18-20.

7. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by White et al, U.S. Patent No. 5,734,881.

White et al teaches the invention including a pre-decode stage in a multiprocessor, comprising:

(a) an instruction buffer (242) comprising at least stages A, B, and C, for buffering instruction bytes,

(b) a multiplexer (322) coupled to said instruction buffer for selecting one of said stages for provision to instruction format logic (324),

(c) a branch indicator (252) for indicating whether the microprocessor branched on a branch instruction in stage A, (col. 12, line 7),

(d) a wrap indicator indicating whether an instruction formatted by said instruction format logic wraps across said stages A and B (fig. 5b; col. 12, line 20),

(e) wherein said multiplexer selects one of said stages based on said branch indicator and said wrap indicator (col. 12, line 44),

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris, U.S. Patent No. 6,260,183 in view of White et al, U.S. Patent No. 5,734,881.

Harris teaches the invention substantially as claimed in claim 2 as set forth in paragraph 6 above, however, does not expressly state that the multiplexer provides the instructions to a format logic that determines the length of an instruction to provide an wrap indicator.

White et al teaches the multiplexer that provides the instructions to a format logic that determines the length of an instruction to provide the wrap indicator as set forth in paragraph 7 above.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made that the format logic enables the handling of instructions crossing the cache line boundary (i.e., wrap beyond the line). The person would have been motivated to incorporate the format logic to enhance the versatility and handle instructions that cross the line boundary.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ryan et al taught a method of selecting instructions from instruction buffer stages.

Hsu et al taught a method of selecting instruction buffer stages when a branch instruction crosses the cache line boundary.

Salem et al taught a method of selecting instruction buffer stages after short branches.

Henry et al taught a method of selecting instruction buffer stages after a short forward branch.

10. Claims 7-17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The claims would be allowable for the references do not teach the selection of instruction buffer stages, each having associated branch indicator, based on the branch instruction wrap indicator and branch indicator.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth S KIM whose telephone number is (703) 305-9693. The examiner can normally be reached on M-F (8:30-17:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on (703) 305-4815. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

KENNETH S. KIM
PRIMARY EXAMINER